DEFENDANT'S EXHIBIT E

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
ALEXANDRIA DIVISION

HALOZYME, INC. Plaintiff v. MICHELLE K. LEE, performing the functions and duties of Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office, Defendant.	Civil Action No. 16-CV-01580 CMH (JFA)

OPENING EXPERT REPORT OF SAMUEL ZALIPSKY, Ph.D., REGARDING NON-OBVIOUSNESS OF THE PENDING CLAIMS OF THE '171 APPLICATION

used to assess non-obviousness further support a finding of non-obviousness of the Pending Claims of the '171 Application.

A. Qualifications

9. A copy of my curriculum vitae, which contains information pertaining to my education, experience, professional activities, publications, presentations, lectures and patents is attached as Exhibit 2 and summarized below.

10. I currently serve as an independent consultant focusing in the area of the design, development and use of carrier mediated drug delivery systems. I have been active in the pharmaceutical and biotechnology industries for over 24 years. Over these years, I have variously supported, designed, and managed the development of formulation, bioconjugation, and delivery of macromolecules, proteins, peptides, lipids, saccharides, and oligonucleotides. I pioneered various PEG functionalization and conjugation methods, contributing to the commercialization of the well-known, trailblazer bioconjugate- and nanoparticulate-based products, PEG-Intron and DOXIL.

11. More specifically, I was Vice President of Research at PhaseRx Pharmaceuticals in Seattle, Washington from 2010-2011 where I focused on the development of polymer-based technology for delivery of oligonucleotides. I also served as Vice President of Technology Development at Intradigm in Palo Alto, California where I oversaw all aspects of drug delivery technology from 2007 to 2010. From 1999 to 2007, I was a Senior Research Fellow and Director of Protein & Linker Chemistry at ALZA Corporation in Mountain View, CA where I introduced and developed new macromolecular conjugates for protein delivery. I was also a Senior Research Investigator at SEQUUS Pharmaceuticals, Inc. in Menlo Park, CA where I designed, synthesized and formulated biocompatible polymers (e.g., PEG), as conjugates with

bioactive compounds from 1992 to 1999. From 1987 to 1991, I was Director of Chemical Research at Enzon, Inc. in South Plainfield, NJ where I developed new methods for preparing reactive polymers and their therapeutic protein conjugates. From 1986-1987, I was a Senior Chemist at Genesis Laboratories in Minneapolis, MN where I developed new methods for protein-protein conjugation.

12. In addition to my extensive experience in the pharmaceutical and biotechnology industries, I have also served as a Visiting Associate Professor in the Chemistry Department at Rutgers University in Piscataway, NJ from 1990-1992. During this time, my research focused on novel functionalized biocompatible polymers, drug carriers and hydrogels. I also supervised post-doctoral fellows and graduate students.

13. I have authored 90 publications, including authoritative reviews, in the field of biocompatible polymeric carriers of drugs and biologics and conjugates of biomacromolecules with lipids, peptides and drugs, including PEGylation. For example, my 1995 review articles in Bioconjugate Chemistry (Functionalized poly(ethylene glycol) for preparation of biologically relevant conjugates, 6:150) and Advanced Drug Delivery Reviews (Chemistry of polyethylene glycol conjugates with biologically active molecules, 16:157) summarize the state of this field since its inception. They are widely cited, even in many current publications. I also edited a state of the art book, "Poly(ethylene glycol) chemistry and Biological Applications," 1997, American Chemical Society Books, Washington DC.

14. I have given numerous lectures and presentations world-wide on these topics, particularly in the fields of functionalized polymers, including PEGs for drug delivery. I am also an inventor of over 50 United States patents, most of which are dealing with PEGylation of biological macromolecules and nanoparticles.

at least 98% amino acid sequence identity with the sequence of amino acids set forth as residues 36-483 in SEQ ID NO:1."

99. In reaching the opinions express in this report, I have applied the knowledge of a person of ordinary skill in the art in completing my analysis of these claim terms.

VII. '140 BOOKBINDER IS NOT A PRIOR ART REFERENCE UNDER 35 U.S.C. § 102 TO THE PENDING CLAIMS OF THE '171 APPLICATION

100. The '171 Application claims priority to February 23, 2005, the filing date of the '716 Application. The '171 Application lists Gregory I. Frost, Louis H. Bookbinder, and Anirban Kundu as inventors. These are the same inventors listed on '140 Bookbinder.

101. As discussed above, each of the Pending Claims have written description and enablement support in the disclosure of the '716 Application.

102. Thus, it is my understanding that '140 Bookbinder, which was filed on March 5, 2004 and published on September 16, 2004, cannot serve as a prior art reference to the '171 Application as it published less than a year prior to February 23, 2005, and is not work of another. I further understand that the PTO asserted that it is the combination of '140 Bookbinder with Braxton or Thompson that form the obviousness combination and did not assert that Braxton or Thompson alone rendered the inventions obvious. Therefore, I do not address those references separately for obviousness.

VIII. ALTERNATIVELY, PENDING CLAIMS 264-266, 278, 291-293, 295-298, 300 and 303 OF THE '171 APPLICATION ARE NOT RENDERED OBVIOUS BY '140 BOOKBINDER, BRAXTON AND THOMPSON

103. I understand that the "test for obviousness is what the combined teachings of '140 Bookbinder, Braxton, and Thompson would have suggested to one of ordinary skill in the art." July 27, 2016 Decision on Appeal, at p. 5 (A2215).